

CLAIMS

1. A buckle for use with a safety belt comprising
a buckle housing formed to define a cavity, an actuator aperture in communication with the cavity, and an insertion opening in communication with the cavity,
an actuator coupled to the buckle housing and formed to include a button accessible through the actuator aperture of the buckle housing and a belt-anchor catch coupled to the button to move with the button,
an ejector spring positioned within the cavity of the buckle housing along a substantially central longitudinal axis defined to extend from a back end of the buckle housing to a front end of the buckle housing,
a locking spring positioned within the cavity of the buckle housing along a transverse axis substantially perpendicular to the longitudinal axis and formed to engage a bottom wall of the buckle housing at a first end and a portion of the belt-anchor catch at a second end to bias the belt-anchor catch in a direction away from the bottom wall of the buckle housing,
a first belt anchor formed to be inserted, at least in part, into the insertion opening to engage the ejector spring and move the ejector spring to a retracted position, and
a second belt anchor coupled to the first belt anchor and formed to be inserted, at least in part, into the insertion opening to engage the belt-anchor catch of the actuator and move the belt-anchor catch of the actuator against the bias of the locking spring.
2. The buckle of claim 1, wherein the actuator comprises a bight member coupled to and positioned to extend between the button and the belt-anchor catch and wherein the ejector spring is aligned with the bight member along the longitudinal axis.
3. The buckle of claim 2, wherein the belt-anchor catch comprises an arm portion and a head portion coupled to the arm portion, and wherein the arm

portion includes a cut-out portion formed to receive, at least in part, the ejector spring therein.

4. The buckle of claim 1, wherein the actuator comprises a pivot arm coupled to the button and the catch such that the actuator, including the pivot arm, catch, and button, is a monolithic member, and further wherein the pivot arm is formed to define a pivot axis about which the actuator pivots.

5. The buckle of claim 4, wherein the buckle housing further comprises a belt-receiving aperture configured to receive a portion of a safety belt therethrough, and wherein the arm of the actuator is positioned between the back end of the buckle housing and the belt-receiving aperture.

6. The buckle of claim 1, wherein the ejector spring is a coil spring and the locking spring is a coil spring.

7. The buckle of claim 6, wherein the buckle comprises a spring mount and the ejector spring is mounted to the spring mount.

8. The buckle of claim 6, wherein the buckle housing comprises a recess formed in the bottom wall and the locking spring is received, at least in part, within the recess.

9. The buckle of claim 1, wherein the first belt anchor comprises a tongue formed to include a front end having a right end portion and a left end portion spaced-apart from the right end portion, and wherein the right and left end portions engage the ejector spring when the first belt anchor is positioned within the cavity of the buckle housing.

10. A buckle for use with a safety belt comprising

a buckle housing formed to define an actuator aperture, an insertion aperture, and an interior cavity in communication with the actuator aperture and the insertion aperture,

an actuator positioned within the interior cavity of the buckle housing and formed to include a button positioned, at least in part, within the actuator aperture, a belt-anchor catch coupled to the button, and a pivot arm coupled to the button and the belt-anchor catch for movement about a pivot axis with the button and belt-anchor catch,

an ejector spring having a first end coupled to the buckle housing and a second end configured to engage a belt anchor of the buckle in the locked position.

11. The buckle of claim 10, wherein the belt-anchor catch of the actuator defines an opening formed to receive at least a portion of the ejector spring therein.

12. The buckle of claim 11, wherein the ejector spring is positioned to lie along a longitudinal axis substantially centrally located between spaced-apart side walls of the buckle housing.

13. The buckle of claim 12, wherein the actuator further comprises a bight member coupled to and positioned to extend between the button and the belt-anchor catch and wherein the bight member is aligned with the ejector spring.

14. The buckle of claim 10, wherein the buckle housing further comprises a spring mount and the ejector spring is coupled to the spring mount.

15. The buckle of claim 10, wherein the buckle housing further comprises a belt-receiving opening configured to receive a portion of the safety belt therein and wherein the belt-receiving opening is positioned between the pivot arm of the actuator and the actuator opening.

16. The buckle of claim 10, further comprising a locking spring positioned within the cavity of the buckle housing between a bottom wall of the buckle housing and the belt-anchor catch of the actuator and wherein the locking spring is a coil spring.

17. The buckle of claim 10, further comprises a first belt anchor having a front end engaged with the ejector spring in a locked position and a second belt anchor coupled to the first belt anchor and engaged with the belt-anchor catch of the actuator in the locked position to couple the first and second belt anchors to the buckle housing.

18. A buckle comprising
a buckle housing having an insertion opening configured to receive a belt anchor therein and an actuator opening,
an actuator positioned within a cavity of the buckle housing and formed to include a button accessible to a user through the actuator opening, a belt-anchor catch coupled to the button, and a pivot arm coupled to the button and the belt-anchor catch and formed to define a pivot axis along a length of the pivot arm, the pivot arm being spaced apart from the button and the belt-anchor catch to form a spring-receiving space between the pivot arm, button, and belt-anchor catch,
an ejector spring coupled to a spring mount of the buckle housing and positioned to lie within the spring-receiving space of the actuator, and
a locking spring positioned between and engaged with the buckle housing and the belt-anchor catch.

19. The buckle of claim 18, further comprising a belt anchor formed to lockingly engage the belt-anchor catch and bias the belt-anchor catch in a direction against the bias of the locking spring.

20. The buckle of claim 18, wherein ejector spring is positioned to lie along a central, longitudinal axis of the buckle housing formed to extend along a length of the buckle housing.